

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

VOLZ et al. Atty. Ref.: 2380-1231; Confirmation No. 7325

Appl. No. 10/510,546 TC/A.U. 2155

Filed: April 25, 2005 Examiner: Bruckart, Benjamin R.

For: METHOD AND SYSTEM FOR ENABLING CONNECTIONS INTO NETWORKS WITH
LOCAL ADDRESS REALMS

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November 17, 2008

Box AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REQUEST FOR RECONSIDERATION AFTER FINAL

Responsive to the final Official Action dated April 1, 2008 (for which petition is hereby made for a one month extension of time), Applicants respectfully request reconsideration and allowance.

Claims 106-171 stand rejected under 35 U.S.C. §1032 as being unpatentable in view of newly-applied Crump. This rejection is respectfully traversed.

The Examiner states that “[t]he Examiner has full latitude to interpret each claim in the broadest reasonable sense.” The Examiner is reminded that such interpretations must be reasonable when interpreted by one of ordinary skill in the art in light of the specification. See MPEP §2111.

Crump addresses the problem of resolving ambiguous local network addresses across multiple address domains using a management information base (MIB) that includes management objects for configuring and controlling a multi-domain network address translator (NAT). The MIB includes objects for defining a domain-specific translation pool, which is a range of addresses from which domain-specific translation addresses are selected. As described on col. 3, lines 32-36, the NAT maps an overlapping domain-specific address in a first (destination) domain (referred to as a local address) to a unique global address that is specific to a second (source) domain. Col. 4, lines 13-16 explains that the local address can be mapped to a different global address for each destination address domain. For example, in Figure 2, A12 is the host X (in domain 1) global address when referenced from domain 2, and A13 is the host X (in domain 1) global address when referenced from domain 3, and so on. So a local address may be mapped to a different unique global address for each address domain. See col. 5, line 64 to col. 6, line 5. In the example of Figure 2, different hosts X, Y and Z all have different global addresses A12, A13, A14; A21, A23, A24; A31, A32, A34.

The NAT 102 may create new unique global addresses for its translation tables as part of a domain name resolution procedure where a source host having a non-unique local address obtains a unique destination global address based upon the domain name of the destination host. See Figure 4 where the DNS proxy sends a translation request to the NAT to translate the destination host local address, which is not globally unique, into a unique destination host global address. In response to the translation request, the NAT determines whether there is already an existing translation entry for the destination host local address. If there is, then the NAT simply sends a translation response including the destination host global address. If not, then the NAT

creates a new entry by selecting a destination host global address from the pool of global network addresses to create the needed address translation table entry.

In contrast, the claimed technology does not make this assumption of limitless supply of unique global network addresses. The problem that the claims in this application address and solve is that the number of unique global addresses may be limited and not sufficient for a one-to-one mapping when a large number of local hosts are involved. Crump simply does not understand that this is or can be a problem and assumes that there is no limit on the number of unique global addresses for use by the NAT 102. If a local host-to-unique global address mapping is not already provided in the translation table, Crump simply assumes that all that needs to be done is to create another translation table entry using a new unique global address. The prospect that there may not always be another new unique global address that can be created is not even entertained by Crump.

The Examiner's attention is directed to the following language from independent claim 106: "prior to initiating establishment of said requested connection ... determining whether the combination of the selected candidate outside-realm gateway address and said multiplexing information is already being utilized for another connection." These features are missing in Crump.

For this step, the Examiner identifies col. 7, lines 46-51, which states: "[u]pon receiving the translation request from the DNS Proxy 104, the NAT 102 first determines whether there is an existing address translation table entry mapping the destination host local address to a destination host global address that is specific to the source address domain." But this is not what is claimed. Crump determines if the local destination host address is already translated in the table to a unique global destination host address. On the other hand, the claim determines if the combination of a global destination host address which may not be unique (i.e., the selected candidate outside-realm

gateway address) and multiplexing information is already being used for another connection. This text in Crump does not teach combining global destination host address and multiplexing information. Nor does it teach checking to see if that combination is already being used for another connection. Crump just looks to see if the local to global address translation already exists in the NAT table, which is something entirely different.

The Examiner is requested to identify what in Crump corresponds to the claimed combination, pointing out what in Crump corresponds to (1) the claimed selected candidate outside-realm gateway address, and (2) the claimed multiplexing information. What in Crump corresponds determining whether the combination of (1) and (2) is already being used for another connection?

Crump is also missing the next step: “repeating, if the combination of the selected candidate outside-realm gateway address and said multiplexing information is already being utilized for another connection, the selecting step until a unique combination is found that is not already being utilized for another connection.” The checking referred to by the Examiner is merely to see if there is already a unique global address assigned to the given/considered local destination host in the given destination domain that can be used. But the address domain information in Crump is not used as multiplexing information to improve the multiplexing capacity of the gateway. So repeating the checking step in Crump referred to by the Examiner will be useless since it will always provide the same result—either there is an existing global address assigned to the local destination host or there is not.

Consider the following simple example. Assume that a public host B wants to connect to two private nodes A1 and A2 and initiates a connection set-up towards node A1, and assume that the gateway resource manager finds an available outside gateway address: aOG1. Assume that host B also initiates a connection set-up towards node A2, and the gateway resource manager

attempts to identify a useful outside gateway address. By using inside node port information in the gateway address selection/identification process (for example), the same public gateway address, aOG1, may be used for both pending connections towards nodes A1 and A2. In other words, the two pending connections can be distinguished based on the destination port information pA1 and pA2. This means that each public gateway address can now be used for any number of private nodes, as long as they all listen on different port numbers. (Again, inside node port information is only an example of suitable multiplexing information that can be used.)

The multiplexing gain provided by the claimed technology is not offered by Crump. That multiplexing gain provides support for a considerably larger number of simultaneous connections compared to the one-for-one address mapping scheme used by Crump. Applicants again present the following non-limiting illustration outlined in the previous response to assist in understanding this significant benefit.

A traditional NAT like that in Crump, having 1000 gateway addresses can support 1000 simultaneous connections. But a NAT having 1000 gateway addresses and information on 1000 inside port numbers, and/or information on 500 outside node addresses can support up to $1000 \times 1000 = 1\,000\,000$ and/or $1000 \times 1000 \times 500 = 500,000,000$ simultaneous connections by using the initial address allocation procedure proposed by the claimed technology. In a world in which almost all technical devices, such as mobiles and computers but also refrigerators and microwave ovens and toasters, are or will be connected to the Internet, there is and continue to be a demand for gateways that can support a very large number of simultaneous connections.

The application is in condition for allowance. An early notice to that effect is requested.

Respectfully submitted,

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